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Fish Stocking Assessment Of Wright Lake, 1998

R. J. Zemlak
April 1999

PWFWCP Report No. 198

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The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

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WRIGHT LAKE

WATERSHED: Peace River

DATE OF SURVEY: September 23 and 24. 1998

FIELD CREW LEADER: Randy J. Zemlak

FIELD ASSISSTANT: Arne R. Langston

PEACE/WILLISTON FISH AND WILDLIFE COMPENSATION PROGRAM

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FISH AND WILDLIFE BRANCH

REPORT PREPARED BY: RANDY J. ZEMLAK

INTRODUCTION

Wright Lake is located near Hudson's Hope BC (Figure 1). The lake has received some attention over the past 8 years from fish biologists with both the Ministry of Environment, Lands and Parks (MELP) and the Peace/Williston Fish and Wildlife Compensation Program (PWFWCP). During January 1991, an application proposed by the MELP to transplant rainbow trout into Wright Lake was accepted by the transplant committee. As a result, rainbow trout have been stocked continuously from 1991 to 1994 and then the stocking rate changed to bi-annual stockings from 1995 to 1998.

An old trail exits on the north east shore which was mainly used by a trapper. In the early 1990's, a more formal trail was then cut into the lake from a nearby cutblock and the BC Forest Service has developed a Forest Recreation Site at the lake. The only survey on record that has been conducted on Wright Lake was a reconnaissance level survey by the PWFWCP in 1990 (McLean and Jesson 1990). No previous surveys or stocking assessments have been conducted on Wright Lake. This initial reconnaissance level survey report can be viewed at the PWFWCP office (address on cover page).

In 1998, Wright Lake was targeted as a high priority for a fish stocking evaluation as part of the stock assessment program for the Peace Region. During September 1998, PWFWCP fish biologists investigated Wright Lake primarily to evaluate the success of the current fish stocking program.

LAKE LOCATION

Location:	41 km southwest of Hudson's Hope BC
Elevation:	± 1,042 m
Latitude/Longitude:	55° 53' 39" : 122° 30' 23"
U.T.M.:	10.531570.6195016 (NAD 1983)
Management Unit:	7-31
N.T.S. Map No.:	93 - O/15 and 93 - O/16
Waterbody Identifier:	01109UPCE
Lake Drainage:	GethingCr.—>DinosaurReservoir—>PeaceR.

ACCESS

Road access all the way to the shoreline of Wright Lake currently does not exist. Although, a rough gravel logging road leading to a nearby clearcut comes within 2 to 3 km of Wright Lake. Anecdotal information at the time of this survey suggested that this road access near the cutblock by Wright Lake was inaccessible by vehicle. As a result, access to Wright Lake for the 1998

Figure 1. Location of Wright Lake.

survey was then achieved by first driving to the Carbon Lake Lodge (km 64 of the Johnson Creek Forest Service Road) and then taking a helicopter from the lodge to transport staff and equipment into Wright Lake (15 minute helicopter ride).

Road access directions to Wright Lake have been documented (1993) by Ted Euchner (Fish Biologist, Fort St. John). From the town of Hudson's Hope, travel northwest to the WAC Bennett Dam. Cross the dam and keep right at the hairpin corner. The surface of the road changes from pavement to gravel. This gravel road is called the "Utah East" Road. Travel 6.3 km until a three-way intersection is reached. The Utah Road ends. Stay left at the intersection on the "Table Creek" Road. Travel another 2.3 km until another three-way intersection is reached. The Table Creek Road ends. At the intersection, stay on the left fork (km 45 of the Johnson Creek Forest Service Road). Taking the right fork will take you to the Carbon Lake Lodge (km 64). Take the left fork and travel 5.1 km (km 40 of the Johnson Cr. F.S.R.). Road conditions from the Utah East Road to the Johnson Cr. F.S.R. are all two-lane 2wd-gravel roads. From the Johnson Cr. F.S.R., turn right on the Gething Creek Road and travel 12.5 km. Road conditions at this point change. This is the extent of 4 x 4 vehicle access. The road has been deactivated beyond this point. The old road then branches at 12.5 km. Stay left and travel another 4 km. The last four km travel through a number of cutblocks and finally ends in a cutblock at roughly km 16 (from the Johnson Cr. F.S.R.). The trail to Wright Lake is located at the west side of this cutblock. From the landing, walk west to a small creek channel entering the forest. The trail enters the forest here and is easily followed to the lake. The trail is roughly 2 to 3 km long and ends at the beginning of the outlet creek to Wright Lake. To get to the Forest Recreation Site, travel across the outlet and walk for approximately another 500 m through the forest. At the time of this survey, the trail was not explored for evidence of current use. Although, there was sign of recent ATV tracks near the lakeshore, despite an ATV closure beyond the cutblock edge.

STOCKING HISTORY

Rainbow Trout

Wright Lake was initially stocked with 8,000 rainbow trout in 1991 (Table 1). Stocking was initially conducted annually until 1994. In 1995, the stocking of Wright Lake ceased and the stocking rate changed to bi-annual stockings. From 1996 to 1998, Wright Lake has then been stocked on a two-year cycle. Many different types of stocks have been introduced. Of these different strains, just over 30,000 rainbow trout have been stocked into Wright Lake during an eight-year period. The average size of these yearling rainbow trout has been 5.8 g.

Table 1. Wright Lake rainbow trout stocking history.

Year	Number	Size (g)	Life Stage	Stock
1991	8,000	6.8	Yearling	NRT Premier
1992	8,797	5.9	Yearling	NRT Premier
1993	7,500	3.7	Yearling	Dragon/Tunkwa
1994	3,000	7.5	Yearling	Tunkwa
1996	1,500	4.6	Yearling	Beaver
1998	2,000	7.8	Yearling	Badger/Tunkwa

METHODS

Wright Lake's rainbow trout stocking program was assessed in September 1998 by fish biologists from the PWFWCP. Three different techniques were used to determine the relative abundance of fish species in Wright Lake: gill nets, Gee traps, and angling gear. Conversations with fish biologist from MELP in Fort St. John prior to field work suggested that bull trout have now colonized Wright Lake from Gething Creek. Therefore, to ensure no bull trout were killed unnecessarily, no gill net sets were to be set overnight. One sinking monofilament experimental gill net was used for two days of netting effort and was set in different locations. The net consisted of six different sized mesh panels ranging from 25 to 85 mm. Each panel is 15.24 m long and 2.4 m wide. The first gill net effort was set in the same location as the 1990 survey to compare the catches between 1990 and 1998. The second method used to capture fish was Gee traps. Each Gee trap (three in total) was baited with sardines and set overnight. The Gee traps were set in shallow (< 2 m) littoral habitat near the shoreline. The third technique used to capture fish was angling gear. A spin cast rod with an assortment of lures and a fly rod with wet and dry flies were utilized.

The rainbow trout captured in the gill net were measured for fork length and weight. A biological examination of the dead fish was conducted which revealed it's sex, maturity, stomach contents, and disease/parasite presence. Scale samples were collected for age determination and analysis was performed by North/South Consultants from Winnipeg, Manitoba. General appearance of the fish was determined through visual analysis. Mean lengths and weights were determined for each age class of rainbow trout. Condition factors ($Weight / Length^3 \times loo$) were determined for each individual fish.

All other fish species were enumerated, and most fish were sampled for fork length and weight. General appearance of these fish were examined and recorded. Disease presence was determined by visual observation. Any non-

game fish captured that were still alive in the gill nets were released immediately.

Fish captured by means other than a gill net were sampled less intensively. All fish captured in the Gee traps were measured for length and then released alive. Any fish captured by angling gear were only sampled for fork length and weight. A scale sample was also taken for age determination. Then, the fish was released alive (no determination of sex or stomach content was performed).

The habitat features of Wright Lake were briefly assessed. The entire perimeter of the lake was observed for any new possible inlets not identified in the original reconnaissance level survey. The outlet stream was assessed for salmonid spawning potential. In addition, photo documentation of the habitat features of Wright Lake was taken. The benchmark established during the original study (1990) was located. Changes to the current water level was measured with an Abney level, 1.5 m staff, and a 30 m Eslon tape. Reference to the high water mark was also measured. Any new developments constructed after the original survey in 1990 were also recorded.

RESULTS

Gill Nets

One gill net was set during the afternoon of September 23 on the south shore (Figure 2). This net yielded a few different fish species, but very few rainbow trout. This gill net, set for 5.85 hours (Appendix 1), produced in order of abundance: 115 longnose suckers (LSU), 3 bull trout (BT), and 1 rainbow trout (RB),(Table2).

On September 24, a second gill netting effort was performed to try and capture more rainbow trout. The gill net was set off of the east shore of the island for 5.17 hours (Appendix 1). This location was selected because of the good angling success achieved on September 23. This net produced, in order of abundance: 124 longnose suckers, 2 rainbow trout, and 1 bull trout (Table 2).

The most abundant species captured was longnose suckers. Almost all of these fish species (estimate 80 %) were captured in the 51 mm and 64 mm sized mesh (240 mm avg. fork length) and were released alive. Very few bull and rainbow trout were captured in the nets.

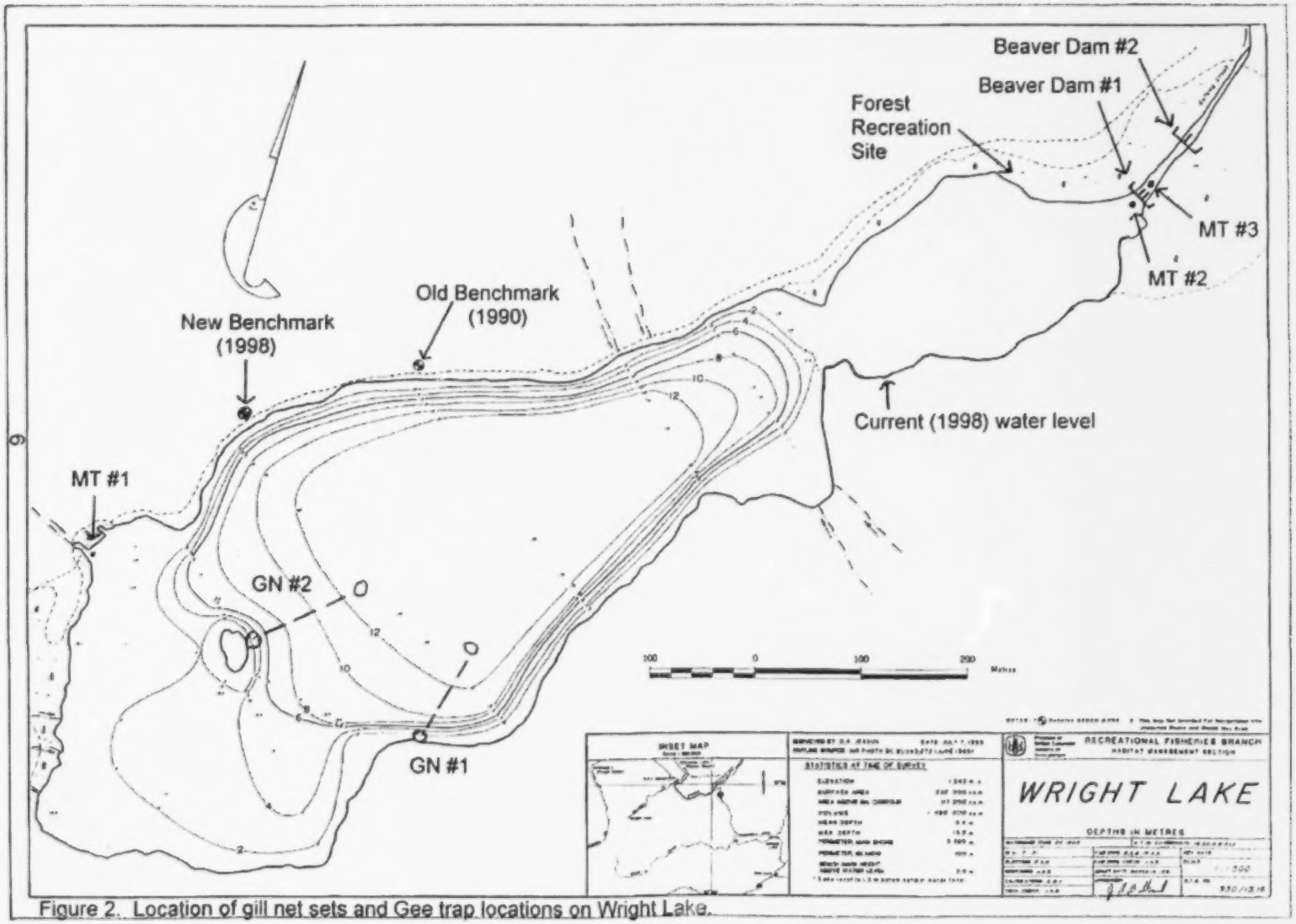

Figure 2. Location of gill net sets and Gee trap locations on Wright Lake.

Table 2. Gill net catch summary for Wright Lake, 1998.

Date	Species	Net Site 1	Net Site 2	Total	Number Sampled	Number Preserved	Size Range (cm)
Sept. 23	LSU	115		115	30	0	18.5 - 35.5
Sept. 23	BT	3		3	3	0	30.7 - 37.5
Sept. 23	RB	1		1	3	0	16.6
Sept. 24	LSU		124	124	30	0	19.3 - 34.9
Sept. 24	BT		1	1	1	0	34.5
Sept. 24	RB		2	2	2	0	13.5 - 30.7

Gee Traps

Two Gee traps were used to capture juvenile fish. The traps were set overnight (Figure 2) for a minimum of 21 hours (Table 3). Minnow trap number two was pulled in the morning of September 24 and re-set below the beaver dam on the outlet. Only one species of fish was captured: longnose suckers. No small bull or rainbow trout were caught in the Gee traps.

Table 3. Gee trap results.

Trap #	Hours fished	Depth (m)	Substrate	Species	Number	Size Range (mm)
1	26.8	0.8	organics/twigs	LSU	1	120
2	21.3	0.5	organics/twigs	none	0	n/a
3	5.0	0.5	organics on cobble	none	0	n/a

Angling

Angling by program staff proved to be a more effective method of capturing rainbow trout. On September 23, two program staff fished for 2.5 hours and captured 18 rainbow trout. Catch per unit effort is 3.6 fish per rod hour. On September 24, two program staff fished for another 2.5 hours and captured 9 rainbow trout. Catch per unit effort is 1.8 fish per rod hour. Only a measure of length and weight and a scale was collected for each of these fish.

Almost all of the rainbow trout captured during this survey was by angling. Age determination for all rainbow (n = 30) and bull trout (n = 4) was received by the consultant (Appendix 2). Prints of the scales/fin rays and age markings were provided for each fish, and reviewed by PWFWCP fish biologists. No obvious errors were detected, although four samples were of poor quality and difficult to age. Mean lengths and weights (Table 3) were calculated. The average condition factor for the 30 rainbow trout is 0.96. In addition, 3 charts were created to observe the population dynamics of these fish (Figures 3 to 5).

Lake: **Wright**

Table 3. Population characteristics of rainbow trout in Wright Lake, 1998.

Age Class	Sample No.	Mean Length (cm)	Range of Length (cm)	SD for Length	Mean Weight (K)	Range of Weight (g)	SD for Weight
1	2	15.9	13.5 - 18.2	3.32	42.8	23.1 - 62.4	27.79
2	3	19.6	16.6 - 21.2	2.57	78.2	48.8 - 93.1	25.46
3	14	28.0	26.6 - 30.6	1.14	214.7	161.8 - 289.5	31.66
4	8	28.3	25.4 - 30.2	1.44	218.2	189.5 - 246.0	19.61
5	3	29.9	28.5 - 30.7	1.19	241.8	215.5 - 274.8	30.20

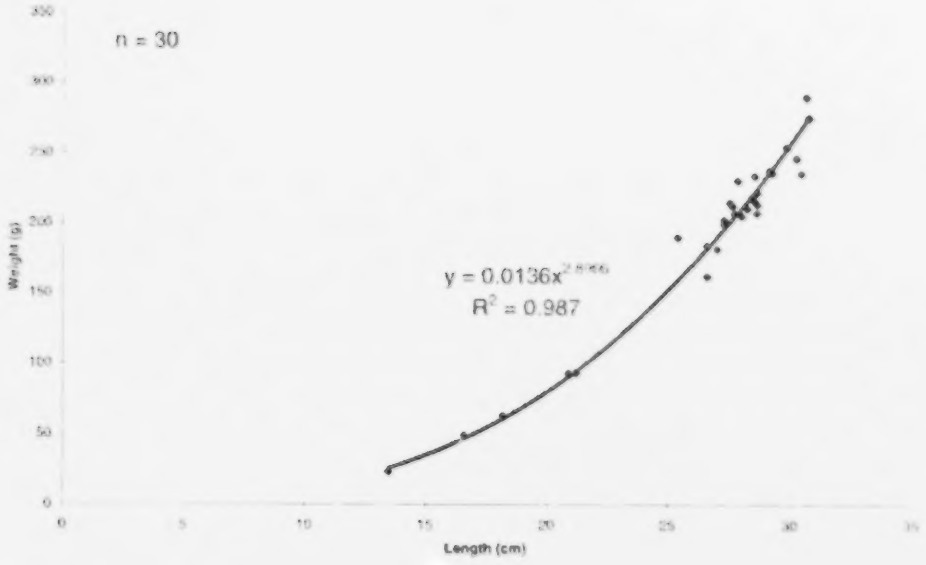

Figure 3. Length versus weight of rainbow trout in Wright Lake.

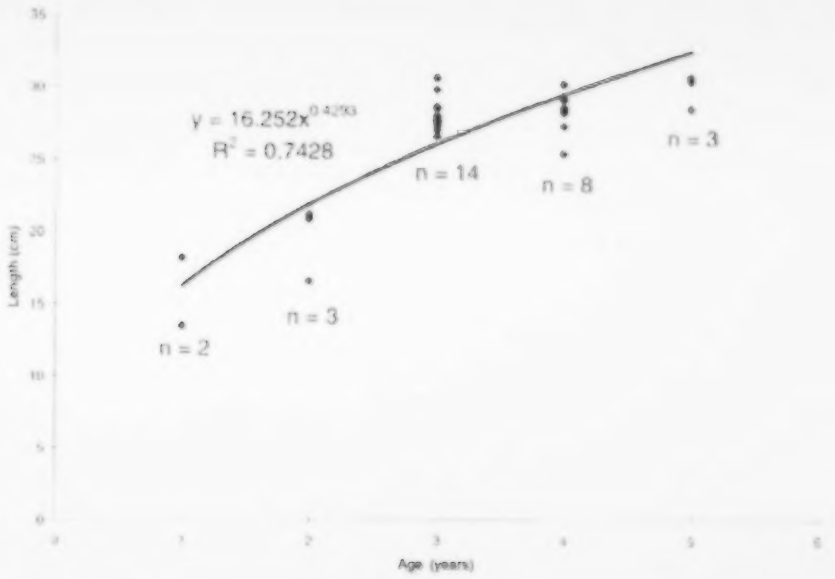

Figure 4. Age versus length of rainbow trout in Wright Lake.

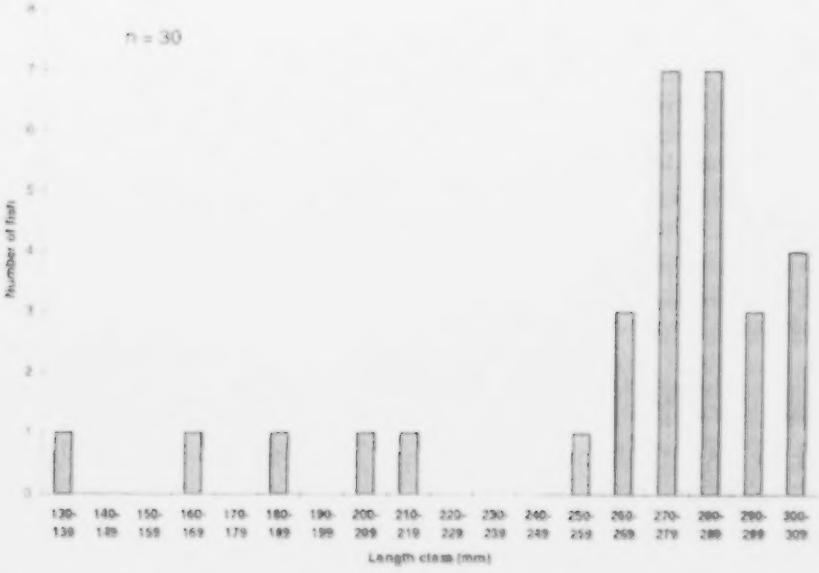

Figure 5. Length frequency distribution of rainbow trout in Wright Lake.

BIOLOGICAL ANALYSIS OF RAINBOW AND BULL TROUT

A biological analysis was conducted on 3 of the 30 captured rainbow trout (Appendix 2). Since the majority of the fish captured were alive, there was no need to kill them to sample them from a biological standpoint. Of the three dead fish, all were females. Reproductive organ analysis revealed that two fish were mature and 1 fish was immature. Examination of stomach contents revealed the two mature fish had zooplankton in their stomach while the one immature fish had an empty stomach. External examination indicated healthy fish while internal examination also revealed healthy fish as no tapeworms or parasites were observed in the body cavity. Although, one angled fish did have a fungus growing externally on the side of its body.

Of the four bull trout captured, only one fish died and was sampled. This dead fish was an immature male and appeared healthy both internally and externally. It was interesting to note that this particular fish had a mature mouse in its stomach. This bull trout weighed 446.5 g.

DRAINAGE AND HABITAT FEATURES

Wright Lake has nine intermittent inlets and one outlet. The intermittent inlets were briefly observed but were not surveyed, as they were too small to afford any salmonid habitat. The outlet (Gething Creek), drains northeast (Plate 1) approximately 25 km to its confluence with Dinosaur Reservoir. Approximately, 1 km upstream of Dinosaur Reservoir on Gething Creek is a series of large waterfalls that are barriers to upstream fish passage.

A beaver dam (Plate 2) controls the water level in Wright Lake. The dam is approximately 75 m long. At the time of this survey, it appears to be a barrier to fish migration. Water is flowing through the dam in a few different places. If the darn were to be breached, the lake level would drop 1.4 m. There was sign of new beaver cuttings at the dam. Above the dam, an active beaver hut is located approximately 30 m away.

The outlet creek below Wright Lake affords minimal spawning habitat for salmonids and has many beaver dams present. Below beaver dam #1 is a long stagnant pond. Evidence of an old bridge (broken now) is located in this area. This bridge, at one time, allowed access from the nearby cutblock to the Forest Recreation Site. At 75 m below the lake is beaver dam #2. This dam is 30 m wide by 80 cm high. Water is seeping through this dam and is stagnant below it. At 95 m downstream of the lake is beaver dam #3. This dam is 7 m wide by 50 cm high. Water is flowing through this dam. Below beaver dam #3, the water is now flowing. The creek is 1.5 m wide and is about 20 cm deep. Substrate consists of organics on cobble. Six small salmonids were observed in

Plate 1: Aerial photo of the outlet and nearby cutblock (closest access point).

Plate 2: Photo of beaver dam #1 on the outlet which controls lake level.

this area. At 145 m downstream of the lake is beaver dam #4. This dam is 10 m wide by 50 cm high. All of the four mentioned dams are barriers to upstream fish passage. Looking downstream of beaver dam #4, there appears to be a series of more beaver dams (end of survey).

BENCHMARK

The benchmark, located on the north shore, was re-located by PWFWCP fish biologists during the 1998 survey (Figure 2). Duane Jesson originally set this benchmark in 1990, 3.0 m above the lake water level. At that time (1990) the lake level was 1.3 m below the normal water level (beaver dam on the outlet must have been breached). During the 1998 survey, field staff had difficulty locating the benchmark. The original location according to the bathymetric map shows it located halfway along the north shore of the lake. The benchmark was eventually found, but located closer to the west side of the lake. It is located in a 40 cm D.B.H. white spruce tree, 1.0 m from shore. The benchmark was re-painted orange. In 1998, the benchmark was at 1.72 m above current lake level, indicating a 1.28 m increase in water level. This would suggest the lake level is back to its normal height. The benchmark is roughly 110 m away from the island located near the west shore.

FISHERIES MANAGEMENT COMMENTS

Wright Lake supports a population of stocked rainbow trout; however the number of fish captured in the gill net sets appear low for the number of fish stocked in the lake. No other stock assessments have been conducted on Wright Lake to compare the rainbow trout net catch per unit effort. In 1998, net #1 yielded 1 rainbow trout for a catch per unit effort of 0.17 rainbow trout per net-hour. Net #2 produced 2 rainbow trout for a catch per unit effort of 0.39 rainbow trout per net-hour. Although, the net sets were short (5 hour plus) and set during the day. An overnight net set may have produced more rainbow trout or the nets could have been set in a low productive area of the lake. This survey required the nets to be set in the same locations as previously set to compare the catches between years. In addition, fish are generally more active during the nighttime period than the daytime and are then more likely to be captured in the net.

Angling efforts produced a better catch per unit effort (2.7 fish per rod hour) than the gill nets for rainbow trout. Almost all (90 %) of the captured fish during the 1998 survey were obtained through angling efforts. These fish were only sampled for length and weight and a scale sample was taken for age determination. All angled fish were then released alive.

The length versus weight relationship of rainbow trout shows the population of fish sampled is not very rotund (Figure 3). The weight of these fish increase according to the equation $W = 0.0136 \times L^{2.5996}$. With the exponent value being less than 3, this would indicate the population is not very chubby. The largest fish captured weighed only 289.5 g. The rainbow trout in Wright Lake could be: a) experiencing a lack of food resources within the lake itself and/or b) competing with the longnose suckers for the available food sources in the lake.

The growth of the rainbow trout population appears to be somewhat slow for the older fish (Figure 4). In the first three years, the rainbow trout population appears to display adequate growth. The age three fish show a mean length of 28.0 cm. At age four, the average length only increased to 28.3 cm, and at age 5, the average length was only 29.9 cm. Again, food resources for these rainbow trout could be limited in Wright Lake.

The length frequency distribution of rainbow trout shows the majority of the population falling in the 280 mm to 300 mm size range (Figure 5). Few aged 1 and 2 year olds were captured. The reason here is more than likely due to the angling efforts focusing on the larger fish and the angling location itself. The size of the lures/flies were probably too large for an age 1 or 2 rainbow trout to bite on it. In addition, no angling was conducted in the east end where it was very shallow (often less than 2 m). Smaller fish may prefer this littoral type habitat.

Natural recruitment to re-populate rainbow trout in Wright Lake is not currently available. All of the seasonal inlet streams do not afford any spawning habitat. The outlet, which possesses small pockets of spawning habitat, contains many beaver dams that constrict fish migration. The constant re-construction of beaver dams in this system make it hard for fish to migrate to their spawning grounds. Water levels in the outlet appear to vary each year based on beaver activity and may not contain adequate flows for rainbow trout to spawn. At this point in time, a periodic stocking program would appear to be more desirable than annually removing the beaver dams and adding spawning substrate on the outlet.

Angling pressure on this lake for rainbow trout is present but the exact amount of use and their catch is unknown. Also, it is unknown if many people fish this lake during the winter season. Future surveys would help define the angling pressure on Wright Lake, but probably is not warranted.

Another salmonid captured in the gill nets was bull trout. Only four bull trout were captured and three were still alive. Therefore, only lengths and weights were recorded and then the fish were then released alive.

Bull trout were not native to Wright Lake up to the original survey conducted in 1990. In 1993, fish biologists with the MELP and the PWFWCP initiated the first year of a bull trout transplant. Bull trout, which inhabit Dinosaur Reservoir, migrate upstream of Gething Creek to spawn in the fall. These fish would inhabit the plunge pool at the bottom of the waterfall located about 1 km upstream from Dinosaur Reservoir. These fish could not move further upstream without assistance from the transplant. The objective of this transplant is to establish a resident population of bull trout in Gething Creek, whereby a percentage of annual yields remain upstream of the falls in the creek and a percentage migrates downstream to Dinosaur Reservoir contributing to the fishery. This transplant has been attempted for the past six years. At this point in time, it appears that these transplanted fish have successfully reproduced and some of the progeny have migrated upstream of Gething Creek and into Wright Lake.

A second, and less likely result of the bull trout inhabiting Wright Lake, may be due to a one time stocking of bull trout in Dowling Creek. This scenario is unlikely because they should have shown up in subsequent sampling projects in Gething, Dowling, and Wright Lake surveys of 1990. Dowling Creek is a tributary stream of Gething Creek. In April of 1985, 430 small bull trout weighing 0.2 g were stocked in Dowling Creek from the Peace Canyon Hatchery. This hatchery is not currently in operation. The chances of these very small bull trout surviving to adulthood and migrating to Wright Lake seem unlikely but is still possible.

An evaluation of the bull trout transplant on Gething Creek is scheduled for the summer of 1999. The results of this survey should indicate how successful the past transplants have been and if a population of bull trout reside within Gething Creek itself.

The bull trout population in Wright Lake appears quite low based on the number of fish captured for the amount of netting effort that was applied. It is possible that even the few bull trout inhabiting Wright Lake are preying upon the smaller rainbow trout. Further studies are required to accurately determine the status of bull trout in Wright Lake.

Wright Lake also supports a population of non-game fish that includes longnose suckers. Although not studied intensively, this population was abundant and appears to be relatively healthy. The 1990 reconnaissance survey report indicated that the longnose sucker population was stunted. In 1998, the weights of these fish were not recorded so an indication of the current condition of these fish can not be reported on. In 1990, only two longnose suckers were captured that were longer than 29 cm. In 1998, the largest sucker measured was 35.5 cm long. The majority of the 1990 fish were approximately 10 cm long while the average length of the 1998 fish was 24.0

cm long. In addition, the net-catch per unit in 1990 yielded 13.0 suckers per net-hour while in 1998, the net yielded 21.7 suckers per net-hour. With the above results, it appears the population of suckers in Wright Lake is doing well. Since the average size of these suckers appear to have more than doubled over time with this survey; it seems that they could be out competing the rainbow trout population for food resources in the lake. Alternately, it is possibly that there is a sampling bias with the gill nets.

MISCELLANEOUS COMMENTS

1. The BC Hydro repeater station (Bullhead Trunk) could be reached from the middle of Wright Lake.

2. The high water mark for Wright Lake was measured at 15 cm.

3. The benchmark location that is indicated by the 1990 bathymetric map is incorrect. The actual location is further west on the north shore and is about 110 m away from the island.

4. A Forest Recreation Site is developed on the northeast shore (just west of the outlet). Two picnic tables, two fire pits, and an outhouse have been constructed. This is a user-maintained site. An old cabin use to be present but is no longer present (assumed to be a trappers cabin).

5. Anecdotal information from a local resident indicated that some rainbow trout (~23 cm long) were seen trapped below the beaver dam on the outlet and can not return to the lake. It is unknown if these fish were creek residents or that they are residents from the lake and want back in.

6. The 3 released bull trout were Floy Tagged (green colour, marked with BC F&W).

FISH STOCKING PROGRAM

The stocking of Wright Lake with rainbow trout appears to be successful as a sport fishery has been created. There does not appear to be any accessible spawning habitat available for rainbow trout in Wright Lake. However, fish could eventually have access downstream of the outlet and populate Gething Creek. Fish trying to migrate back into Wright Lake are currently experiencing difficulty with the numerous beaver dams present. It would be desirable to continue stocking with viable fish as any fish movement downstream would provide to the resident population of Gething Creek or possibly add to the sport fishery in Dinosaur Reservoir. Currently the stocking

rate is bi-annual. Since the rainbow trout captured in 1998 appear somewhat small for their size, the stocking of fish every second year should remain the same and allow the fish some time to grow before the next stocking year. At this time, there appears to be fewer, larger fish with a competitive edge. In addition, it is possible that there could be some impacts of the bull trout on the rainbow trout population.

The capture of bull trout in Wright Lake likely suggests that the offspring from the previous (1993 to 1998) Gething Creek bull trout transplants have colonized the lake. Once an evaluation is completed on Gething Creek in 1999, a report of the findings will be produced and indicate the success of these bull trout transplants. The next stocking assessment should be conducted in 2003 to see if the rainbow trout have further increased in size and compete with the other fish species in Wright Lake.

LITERATURE CITED

Anonymous. Unpublished data sheets containing water chemistry analysis and water oxygen/temperature data at Wright Lake on February 21, 1990. Ministry of Environment, Fort St. John, British Columbia.

McLean, A.R. and D.A. Jesson 1990. A reconnaissance survey of Wright Lake. Peace/Williston Fish and Wildlife Compensation Program Report No. 102. 20pp plus appendicies.

APPENDIX 1

Netting Record

Lake: Wright

NETTING RECORD

Mesh sizes experimental order: 25, 76, 51, 89, 38, 64 mm

NETTING SITE #1

Type:	Sinking monofilament gill net		
Date Set:	September 23, 1998	Time:	1130 hrs
Date Lifted:	September 23, 1998	Time:	1721 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm	Depth: Substrate:	0.75 m boulder/cobble
Deep End Mesh Size:	64 mm	Depth: Substrate:	13.5 m organics

Comments:

Set in the same location as the 1990 survey. Net was checked at 1345 on September 23. The net had 1 bull trout and 38 longnose suckers (released alive). The net was kept in the water to fish longer. The net was pulled on the same day and the net catch yielded 1 rainbow trout, 3 bull trout, and 115 longnose suckers.

NETTING SITE #2

Type:	Sinking monofilament gill net		
Date Set:	September 24, 1998	Time:	0900 hrs
Date Lifted:	September 24, 1998	Time:	1410 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm	Depth: Substrate:	0.5 m cobble/boulder
Deep End Mesh Size:	64 mm	Depth: Substrate:	13.0 m organics

Comments:

Net was checked at 1200 on September 24. The net had no fish in the first two shore panels and 4 longnose suckers in the third panel from shore. The net was kept in the water to fish longer. The net was pulled on the same day and the net catch yielded 2 rainbow trout, 1 bull trout, and 124 longnose suckers.

APPENDIX 2

Individual Fish Data

Lake: **Wright**

INDIVIDUAL FISH DATA

Date Captured: September 23, 1998
Angling and Gill Net #1

M - Male
F - Female
7 - Not Obvious

IMM - Immature
MG - Maturing
MT - Mature
GV - Gravid
SP - Spent
7 - Not Obvious

EG - Egg
ML - Milt
HD - Head
TG - Fish Tag
ST - Stomach

SC - Scale
FR - Fin Ray
OT - Otolith
WF - Whole Fish

Method of Capture: Sinking monofilament gill net.
Condition Factor (K) = $W / L^3 \times 100$

Species	Fork Length (cm)	Weight (grains)	K	Gonadal Maturity	Sex	Age (yrs)	Stomach Contents					Comments
							Bottom Organisms	Plankton	Insects	Fish	Other	
RB	30.2	246.0	0.8931			4						released alive
RB	28.5	215.5	0.9309			5						released alive
RB	20.9	92.7	1.0154			2						released alive
RB	28.4	218.3	0.9530			4						released alive
RB	27.5	214.4	1.0309			3						released alive
RB	26.6	183.7	0.976O	IMM	F	3					empty	died
RB	27.3	199.2	0.9790			3						released alive
RB	26.4	189.5	1.1564			4						released alive
RB	27.8	230.1	1.0710			3						released alive
RB	28.6	221.6	0.9473			3						released alive
RB	29.1	236.9	0.9614			4						released alive
RB	18.2	62.4	1.0351			1						released alive
RB	28.0	205.0	0.9339			3						released alive
RB	30.6	289.5	1.0104			3						released alive

Lake: **Wright**

RB	28.2	210.4	0.9382			4						released alive
RB	27.0	181.4	0.9216			3						released alive
RB	27.7	206.9	0.9735			3						released alive
RB	16.6	48.8	1.0668			2						released alive
RB	29.8	253.8	0.9591			3						released alive
BT	37.5	575.0	1.0904			4	(Green	Floy Tag	F& W	#	00058	released alive
BT	30.7	252.5	0.8727			2	(Green	Floy Tag	F& W	#	00059	released alive
BT	33.0	347.3	0.9664			2	(Green	Floy Tag	F& W	#	00060	released alive

Lake: **Wright**

INDIVIDUAL FISH DATA

Date Captured: September 24, 1998
Angling and Gill Net #2

M - Male
F - Female
? - Not Obvious

IMM - Immature
MG - Maturing
MT - Mature
GV - Gravid
SP - Spent
? - Not Obvious

EG - Egg
ML - Milt
HD - Head
TG - Fish Tag
ST - Stomach

SC -Scale
FR - Fin Ray
OT - Otolith
WF - Whole Fish

Method of Capture: Sinking monofilament gill net.
Condition Factor (K) = $W / L^3 \times 100$

Species	Fork Length (cm)	Weight (grains)	K	Gonadal Maturity	Sex	Age (yrs)	Stomach Contents					Comments
							Bottom Organisms	Plankton	Insects	Fish	Other	
RB	26.6	161.8	0.8597			3						released alive
RB	29.2	235.5	0.9459			4						released alive
RB	27.3	202.0	0.9928	MT	F	4		zoo.				died
RB	27.6	212.1	1.0088	MT	F	3		zoo.				died
RB	30.7	274.8	0.9497			5						released alive
RB	13.5	23.1	0.9389			1						released alive
RB	30.4	235.2	0.8372			5						released alive
RB	28.6	207.1	0.8853			4						released alive
RB	28.6	213.2	0.9114			3						released alive
RB	28.5	233.5	1.0087			3						released alive
RB	21.2	93.1	0.9771			2						released alive
BT	34.5	446.5	1.0873	IMM	M	3					mouse	died

- Of the 30 rainbow trout sampled, 27 fish were angled and released alive.
- The average condition factor for all 30 rainbow trout is 0.9689.
- Of the 4 bull trout sampled, 3 fish were angled and released alive.

AGE DETERMINATION COMPLETED BY:

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